



CO₂ emissions of housing sector heating demand in Saxony 2030

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Within the set of ecological aspects the consumption of land and energy are of main importance. Saxony as a federal state of Germany and its municipalities are interested to further reduce the energy consumption and the associated CO₂-emissions in the residential building sector. But this depends also on development trends in the housing sector and the growth of floor space in general, both – in Saxony – under conditions of a shrinking population.

These interdependencies were analysed by IOER. The space heating requirement in kilowatt-hours per year was calculated for different building types as well as different age groups of buildings. The heating demand was then forecasted for the years 2000, 2020 and 2030. The calculation based on estimates of the future floor areas and on characteristic energy performance of building.

Floor area in Saxony

Although the number of the households decreases from 2.10 to 2.02 million, the floor area will rise by 8 % in Saxony in the period of 2000 to 2030. One reason for the rise of floor area is the growing number of single and two-family houses, another reason is the change of attitudes. People effort bigger apartments when prices are low due to oversupply. At the same time households will become smaller (2.11 person per household in 2000 and 1.95 in 2030).

Heating Energy demand

Although the inhabited floor area of the residential building sector increases, the space

heating requirement of old and new residential buildings will in sum decrease by 11 % because of CO₂-reduction programs and incentive by the government. But calculated in CO₂-emissions per inhabitant, there will be no reduction between 2000 and 2030.

A subdivision into different types of residential building (building types and building ages = different market segments) show in more detail the shift between the different market segments. First, the yearly space heating requirement will be determined even more than today by single und two-family houses (on average 60 %). Single and two-family houses dominate the new construction with 75 %. Second, the number of occupied dwellings in prefabricated multi unit residential buildings will be reduced approx. by 30 %. This is bad news for the district heating in those areas. Third, vacancies will remain around 20 % within Multi Unit Residential Building.

Additional:

Investigations on space heating requirement show that unoccupied flats consume energy from flats which are still inhabited (“stealing the heat” from the neighbour). If 20 % unoccupied flats are distributed like a “Swiss cheese” in the residential buildings the consumption of space heating requirement increases by approx. 4 % for the occupied ones. This outweighs the yield of regenerative energy sources (PV and active Solar) in the residential sector.